Omnidirectional Inter-satellite Optical Communicator

Completed Technology Project (2016 - 2018)

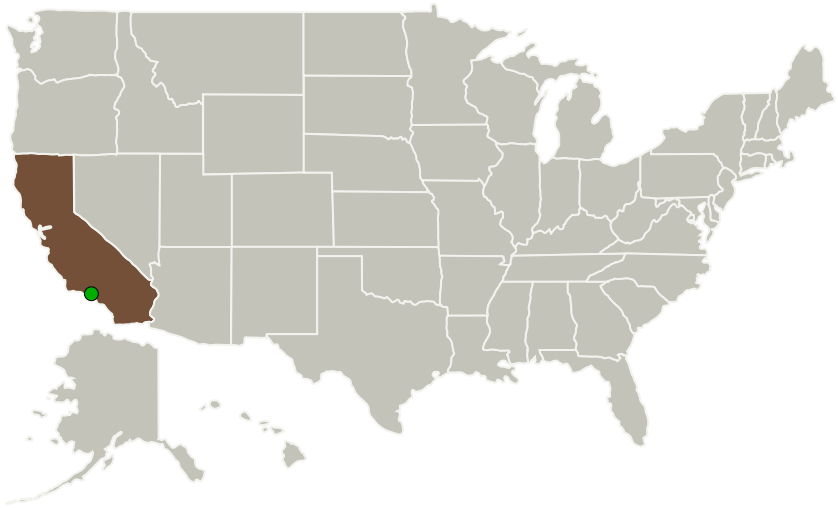
Project Introduction

The objective of the Omnidirectional Inter-Satellite Optical Communicator (ISOC) project is to design a compact, lightweight, and energy efficient omnidirectional inter-satellite laser comm system for cross linking between spacecraft. The ISOC uses a dodecahedron geometric array of chip scale, MEMS-based gimbal-less scanning mirrors that provide adjustable beam pointing and spherical field of view coverage for uninterrupted data transmission between several small spacecraft at arbitrary relative positions.

Anticipated Benefits

Low cost optical cross links can be used in nanosatellite missions that involve constellations or swarms needing to transfer high data rates from node to node or from daughter-spacecraft to mother-spacecraft. This technology could help enable constellations of nanosatellites to network with one another for heliophysical or Earth observations.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

University of California-Irvine

Responsible Program:

Small Spacecraft Technology

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Organizations Performing Work	Role	Type	Location
University of California-Irvine	Lead Organization	Academia Asian American Native American Pacific Islander (AANAPISI), Hispanic Serving Institutions (HSI)	Irvine, California
Jet Propulsion Laboratory(JPL)	Supporting Organization	NASA Center	Pasadena, California

Primary U.S. Work Locations
California

Project Website:

https://www.nasa.gov/directorates/spacetech/home/index.html

Project Management

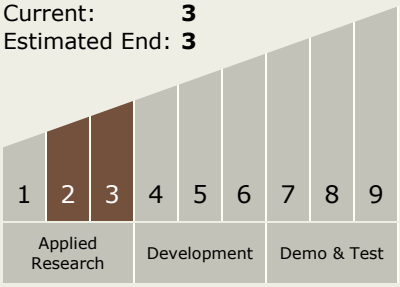
Program Director:
Christopher E Baker

Program Manager:
Roger Hunter

Principal Investigator:
Ozdal Boyraz

Technology Maturity (TRL)

Start: **2**
Current: **3**
Estimated End: **3**



Target Destinations

The Sun, Earth